

CLAIMS

1. A solenoid valve device installed in a gas tank in which the solenoid valve device is provided in a gas tank for filling high pressure gas therein, and a movable core is attracted to or distracted from a fixed core by energization or non-energization of a coil so that a valve element is attached to or detached from a valve seat for opening/closing operation,

the solenoid valve device comprising:

a valve body that includes a flow passage formed therein to communicate an inside and an outside of the gas tank, the valve body being inserted to the inside from the outside through a mouth hole of the gas tank and attached to the mouth hole, the valve seat being provided in the flow passage, and the movable valve element attached to or detached from the valve seat being provided in the valve body, and

a solenoid unit that includes the movable core engaged with the valve element and the fixed core facing the movable core to attract the movable core by the energization of the coil and distract the movable core by the non-energization of the coil, the solenoid unit being arranged inside a storage hole formed at an end part of the valve body inside the gas tank,

a cap member being provided to cover the end part of the valve body inside the gas tank, an opening formed in an end face of the cap member communicating with the flow passage, and a flat plate-like filter member being disposed in the opening.

2. The solenoid valve device installed in a gas tank according to claim 1 wherein the flow passage is provided along an outer periphery of the valve body outside the storage hole.

3. A solenoid valve device installed in a gas tank in which the solenoid valve device is provided in a gas tank for filling high pressure gas therein, and a movable core is attracted to or distracted from a fixed core by energization or non-energization of a coil so that a valve element is attached to or detached from a valve seat for opening/closing operation,

the solenoid valve device comprising:

a valve body that includes a flow passage formed therein to communicate an inside and an outside of the gas tank, the valve body being inserted to the inside from

the outside through a mouth hole of the gas tank and attached to the mouth hole, the valve seat being provided in the flow passage, and the movable valve element attached to or detached from the valve seat being provided in the valve body, and

a solenoid unit that includes the movable core engaged with the valve element and the fixed core facing the movable core to attract the movable core by the energization of the coil and distract the movable core by the non-energization of the coil, the solenoid unit being arranged inside a storage hole formed at an end part of the valve body inside the gas tank,

an opening communicating with the flow passage being formed on an outer peripheral side of the valve body, and a ring-like filter member being disposed in the opening.

4. A solenoid valve device installed in a gas tank in which the solenoid valve device is provided in a gas tank for filling high pressure gas therein, and a movable core is attracted to or distracted from a fixed core by energization or non-energization of a coil so that a valve element is attached to or detached from a valve seat for opening/closing operation,

the solenoid valve device comprising:

a valve body that includes a flow passage formed therein to communicate an inside and an outside of the gas tank, the valve body being inserted to the inside from the outside through a mouth hole of the gas tank and attached to the mouth hole, the valve seat being provided in the flow passage, and the movable valve element attached to or detached from the valve seat being provided in the valve body, and

a solenoid unit that includes the movable core engaged with the valve element and the fixed core facing the movable core to attract the movable core by the energization of the coil and distract the movable core by the non-energization of the coil, the solenoid unit being arranged inside a storage hole formed at an end part of the valve body inside the gas tank,

a rotating direction positioning member being inserted to a groove formed in the valve body and a groove formed in the fixed core, and a cutout for inserting a lead connecting the coil to an external power supply being formed in the rotating direction positioning member.

5. A solenoid valve device installed in a gas tank in which the solenoid valve device is provided in a gas tank for filling high pressure gas therein, and a movable core is attracted to or distracted from a fixed core by energization or non-energization of a coil so that a valve element is attached to or detached from a valve seat for opening/closing operation,

the solenoid valve device comprising:

a valve body that includes a flow passage formed therein to communicate an inside and an outside of the gas tank, the valve body being inserted to the inside from the outside through a mouth hole of the gas tank and attached to the mouth hole, the valve seat being provided in the flow passage, and the movable valve element attached to or detached from the valve seat being provided in the valve body, and

a solenoid unit that includes the movable core engaged with the valve element and the fixed core facing the movable core to attract the movable core by the energization of the coil and distract the movable core by the non-energization of the coil, the solenoid unit being arranged inside a storage hole formed at an end part of the valve body inside the gas tank,

a discharge passage that can discharge the high pressure gas to an outside being formed in the valve body separately from the flow passage, and a lead connecting the coil to an external power supply being inserted to the discharge passage.

6. The solenoid valve device installed in a gas tank according to one of claims 1 to 5 wherein the solenoid unit is constituted such that an insertion hole for inserting the coil is axially bored from one end face of the fixed core, the coil is inserted to the insertion hole and retained by a retention ring attached to the insertion hole, and the coil is axially pressed by a resilient member inserted to the insertion hole.

7. The solenoid valve device installed in a gas tank according to one of claims 1 to 6 wherein the solenoid unit is constituted such that the fixed core stored in the storage hole is retained by a retention ring attached to the storage hole, and the fixed core is axially pressed by a resilient member stored in the storage hole.